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Amdt. Dated Jul. 26, 2004
Reply to Office Action of Apr. 26, 2004

REMARKS

Claims 3 and 5 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention due to the term "nitrogen-carbon-oxygen content." Claims 1, 8, 9 and 11 use "isocyanate group."

Claims 1-5 and 8 were rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent 6486261 to Wu. Claims 1-5 and 8 were also rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent Application Publication 2003/0171166 to Cavallaro.

Wu discloses liquid Diamines (at room temperature) like Unilink 4200 and other liquid curatives (at room temperature) like E-300 and E-100c. Wu discloses other di-hydroxyl functional curatives like 1, 4 Butane diols and 1,3 Butane diols. These curatives are used for slow curing in a multiple step molding with a MDI-PTMEG based prepolymer system.

The Present Application differs from Wu. First, the Present Application uses a diamine, (4,4' methylene bis-(2,6 diethyl)-aniline also known as MDEA, which is used in combination with Unilink 4200 and with a low-free TDI-PTMEG prepolymer, which provides a unique chemistry far different than what is described by Wu. The Present Application is directed at a one step method with a low-free TDI-PTMEG system, which provides a very different structure compared to a "slow curing" polamine system with a "regular" MDI-PTMEG system.

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Additionally, the MDEA and the Unilink have the same molecular weight and both are bi-functional. This is a benefit stoichiometrically since the chemistry will be more consistent compared to the curatives disclosed by Wu.

Also, the NCO group content range of the claimed invention of the application is much lower than that disclosed in Wu. Wu's system is directed at a regular MDI-PTMEG system, where to achieve the same hardness for the cure product requires a higher NCO group content compared to a "low-free" isocyanate system and in this case, low-free TDI-PTMEG prepolymer. A low-free system generates less exotherm and hence provides a longer gel time. For example, a regular MDI with Ester or Ether backbone, for a 55 Shore D cover hardness requires a NCO group content of about 10-12%, wherein a "low free" system TDI will provide the same hardness with a NCO group content hardness in the range of 5-7%.

The same argument applies to Cavallaro since Wu and Cavallaro do not disclose a chemistry with curative blends of similar or close equivalent weight, and their slow curing system discloses a multiple step process which is distinguishable from the claimed invention of the Present Application.

In the Present Application, the purpose of the second curative, preferably Unilink 4200, is to lower the "overall" melting point of the curative blend, where the other component of the curative blend is MDEA.

For example, MDEA melts at approximately 225 °F. A reaction with a "low free" TDI-PTMEG prepolymer (6% NCO group content) at 150 °F will provide a "gel time" (where the system gels or becomes solid) of 15 seconds since an exothermic reaction with a curative at a high temperature will make for a fast reaction.

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If the same MDEA is melted with Unilink 4200 at 175°F, the curative blend will stay as a homogenous mixture. Reacting the curative blend with the "low free" TDI-PTMEG prepolymer (6% NCO group content) will provide a gel time of 60 seconds to a golf ball cover with a 35-55 Shore D hardness. The overall solution temperature is lowered which slows the exothermic reaction thereby extending the time to react and providing a longer gel time (60 seconds) which is suitable for golf ball cover formation.

It is believed that the remaining claims are now allowable. The Applicants therefore respectfully solicit a Notice of Allowance.

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